

What is claimed is:

1. A method executable by a computer of automatically generating access to at least one Business Application executed on a data processing system, wherein said Business Application is panel-driven and offers its services interacting with a user controlled by at least one Business Application panel and wherein said Business Application processes succeeding Business Application panels dependent on user interactions or user specified data or the contents of any kind of data base the Business Application is operating on, said computerized method comprising:

an analysis step of analyzing a description of said Business Application panels determining their input data and a generation step generating according to said analysis step at least one procedure, called Transaction Method, said Transaction Method being callable from a program and said Transaction Method being generated to autonomously executing at least a part of said Business Application without interacting with said user;

wherein said generation step generates program code into said procedure, which, when executed, is providing required input data according to said analysis step to at least one sequence of succeeding Business Application panels, said sequence comprising at least one Business Application panel, and wherein said generation step generates program code into said procedure, which, when executed, is performing a required activity for launching said Business Application to autonomously process said at least one sequence of succeeding Business Application panels without interaction with said user.

2. The method according to Claim 1 further comprising generating said description of said Business Application panels prior to said analysis step wherein said Business Application

4 panel description being independent from the system environment  
5 in which said Business Application is implemented and wherein  
6 the method encompasses:

7 a Business Application panel modelling step, in which at  
8 least one of said Business Application panels, processed by said  
9 Business Application as input or output panels, called Business  
10 Application messages, is modelled with respect to individual  
11 Business Application panel elements;

12 a Business Application message description generation step,  
13 in which at least one of said Business Application panels,  
14 processed by said Business Application as input or output  
15 panels, called Business Application messages, is parsed with  
16 respect to individual Business Application panel elements; and

17 in which for each modelled Business Application message  
18 Transaction Record is generated storing said Business  
19 Application message description;

20 a User Interaction Graph generation step, in which the  
21 sequence of Business Application messages as processed by said  
22 Business Application is stored in at least one directed User  
23 Interaction Graph.

1 3. The method according to Claim 2 further comprising:

2 a Business Application message transition generation step  
3 in which a Business Application message transition action is  
4 generated to launch the Business Application to process a next  
5 Business Application panel after a current Business Application  
6 panel according to the sequence within the User Interaction  
7 Graph; and

8 in which said Business Application message transition  
9 action is stored within the generated Transaction Record during  
10 said Business Application message description generation step.

1 4. The method according to Claim 2 wherein said Business  
2 Application message description generation step stores

3 Descriptive information on the individual panel elements  
4 assembling said Business Application message with respect to  
5 type or length or position or indications which of the panel  
6 elements represent input and/or output elements within said  
7 Transaction Record.

1 5. The method according to Claim 2 wherein said Business  
2 Application panel description is generated by parsing and  
3 analyzing Business Application message implementations of the  
4 system environment said Business Application is implemented by  
5 interactions with a user of the data processing system gathering  
6 required Business Application panel description information.

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1 6. The method according to Claim 2 wherein said Business  
2 Application message description generation step incorporates  
3 indications on specific characteristics into the generated  
4 Transaction Record encompassing  
5 an Entry Transaction Record indication, characterizing a  
6 Business Application messages required for an initial start of a  
7 Business Application execution;

8 an External Transaction Record indication, characterizing a  
9 Business Application message being part of a second User  
10 Interaction Graph and thus describing a Business Application  
11 message sequence with a branch from a first User Interaction  
12 Graph to said second User Interaction Graph;

13 an interactive Transaction Record indication, indicating a  
14 Business Application message representing a first Business  
15 Application message of an execution unit of succeeding Business  
16 Application messages within said User Interaction Graph  
17 encompassing at least said interactive Transaction Record; and

18 a preemptive Transaction Record indication, indicating a  
19 Business Application message being part of said execution unit  
20 of succeeding Business Application messages and not being a  
21 first Business Application message in said execution unit.

7. The method according to Claim 6 in which at least one Transaction Method is generated and provided to execute an execution unit of succeeding Business Application messages, said Transaction Method is starting said execution of Business Application messages with an interactive Transaction Record;

said Transaction Method is proceeding said execution of Business Application messages with all preemptive Transaction Records succeeding said interactive Transaction Record within the User Interaction Graph;

said Transaction Method is ending said execution of Business Application messages with a next interactive Transaction Record or with a last preemptive Transaction Record, if no Transaction Record is succeeding said last preemptive Transaction Record within the User Interaction Graph.

8. The method according to Claims 7 wherein said generated Transaction Method

encompasses as Transaction Method input parameters all input elements of all Business Application messages modelled by Transaction Records belonging to said execution unit and

encompasses as Transaction Method output parameters, all output elements of all Business Application messages modelled by Transaction Records belonging to said execution unit.

9. The method according to Claim 1 extending the generated Transaction Method by communication relevant capabilities provided for

allowing the Transaction Method to be executed in a local data processing system and

allowing the Transaction Method to communicate with a remote data processing system via a computer network using anyone of the available communication protocols and

9 allowing the Transaction Method to control execution of  
10 said underlying Business Application on said remote data  
11 processing system.

1 10. The method according to claim 1 in which the Transaction  
2 Method is generated as a method of a Transaction Object (TO)  
3 class in the sense of object-oriented technology for  
4 encapsulating and controlling said Business Application and said  
5 Transaction Method method is being called TO Method (TOM).

1 11. The method according claim 1 in which said Transaction  
2 Record is generated as Transaction Record class in the sense of  
3 object-oriented technology.

1 12. In a computer automatically generating access to at least  
2 one Business Application executed on a data processing system,  
3 wherein said Business Application is panel-driven and offers its  
4 services interacting with a user controlled by at least one  
5 Business Application panel and wherein said Business Application  
6 processes succeeding Business Application panels dependent on  
7 user interactions or user specified data or the contents of any  
8 kind of data base the Business Application is operating on, an  
9 apparatus comprising:

10 means for analyzing a description of said Business  
11 Application panels determining their input data and

12 means for generating at least one Transaction Method  
13 according to said analysis, said Transaction Method being  
14 callable from a program and said Transaction Method being  
15 generated to autonomously execute at least a part of said  
16 Business Application without interacting with said user;

17 wherein said means for generating includes program code in  
18 said procedure, which, when executed, is providing required  
19 input data according to analysis by said means for analysis to

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a  
20 at least one sequence of succeeding Business Application panels,  
21 said sequence comprising at least one Business Application  
22 panel, and

23 wherein said means for generating includes program code in  
24 said procedure, which, when executed, is performing a required  
25 activity for launching said Business Application to autonomously  
26 process said at least one sequence of succeeding Business  
27 Application panels without interaction with said user.

1 13. The apparatus according to Claim 12 wherein said means for  
2 generating generates a Business Application panel description of  
3 said Business Application panels prior to analysis by said means  
4 for analysing wherein said Business Application panel  
5 description being independent from the system environment in  
6 which said Business Application is implemented and wherein the  
7 apparatus includes:

8 a Business Application panel modelling means in which at  
9 least one of said Business Application panels, processed by said  
10 Business Application as input or output panels, is modelled into  
11 Business Application messages with respect to individual  
12 Business Application panel elements;

13 a Business Application message description generation means  
14 in which at least one of said Business Application panels,  
15 processed by said Business Application as input or output  
16 panels, is parsed into Business Application messages with  
17 respect to individual Business Application panel elements; and

18 in which for each modelled Business Application message, a  
19 Transaction Record is generated storing a Business Application  
20 message description; and

21 a User Interaction Graph generation means, in which a  
22 sequence of processed Business Application messages is stored in  
23 at least one directed User Interaction Graph.

14. The apparatus according to Claim 13 wherein said apparatus further encompasses:

a Business Application message transition generation means, in which a Business Application message transition action is generated to launch the Business Application to process a next Business Application panel after a current Business Application panel according to the sequence within the User Interaction Graph; and

in which said Business Application message transition action is stored within the generated Transaction Record by said Business Application message description generation means.

15. The apparatus according to Claim 13 wherein said Business Application message description generation means stores descriptive information on the individual panel elements assembling said Business Application message with respect to type or length or position or indications which of the panel elements represent input and/or output elements within said Transaction Record.

16. The apparatus according to Claim 13 wherein said Business Application panel description is generated by parsing and analyzing Business Application message implementations of the system environment, said Business Application being implemented by interactions with a user of the data processing system gathering required Business Application panel description information.

17. The apparatus according to Claim 13 wherein said Business Application message description generation means incorporates indications on specific characteristics into the generated Transaction Record encompassing:

5 *Part*  
6 *at* an Entry Transaction Record indication, characterizing a  
7 Business Application messages required for an initial start of a  
8 Business Application execution;

8 an External Transaction Record indication, characterizing a  
9 Business Application message being part of a second User  
10 Interaction Graph and thus describing a Business Application  
11 message sequence with a branch from a first User Interaction  
12 Graph to said second User Interaction Graph;

13 an interactive Transaction Record indication, indicating a  
14 Business Application message representing a first Business  
15 Application message of an execution unit of succeeding Business  
16 Application messages within said User Interaction Graph  
17 encompassing at least said interactive Transaction Record; and

18 a preemptive Transaction Record indication, indicating a  
19 Business Application message being part of said execution unit  
20 of succeeding Business Application messages and not being a  
21 first Business Application message in said execution unit.

1 18. The apparatus according to Claim 17 in which at least one  
2 Transaction Method is generated and provided to execute an  
3 execution unit of succeeding Business Application messages,  
4 said Transaction Method is starting said execution of  
5 Business Application messages with an interactive Transaction  
6 Record;

7 said Transaction Method is proceeding said execution of  
8 Business Application messages with all preemptive Transaction  
9 Records succeeding said interactive Transaction Record within  
10 the User Interaction Graph;

11 said Transaction Method is ending said execution of  
12 Business Application messages with a next interactive  
13 Transaction Record or with a last preemptive Transaction Record  
14 if no Transaction Record is succeeding said last preemptive  
15 Transaction Record within the User Interaction Graph.



19. The apparatus according to Claims 18 wherein said generated Transaction Method:

encompasses as Transaction Method input parameters, all input elements of all Business Application messages modelled by Transaction Records belonging to said execution unit; and encompasses as Transaction Method output parameters, all output elements of all Business Application messages modelled by Transaction Records belonging to said execution unit.

20. The apparatus according to Claim 12 extending the generated Transaction Method by communication relevant capabilities provided for

allowing the Transaction Method to be executed in a local data processing system and

allowing the Transaction Method to communicate with a remote data processing system via a computer network using anyone of the available communication protocols and

allowing the Transaction Method to control execution of said underlying Business Application on said remote data processing system.

21. The apparatus according to claim 12 in which the Transaction Method is generated as a Transaction Object class of object-oriented technology for encapsulating and controlling said Business Application.

22. The apparatus according claim 12 in which said Transaction Record is generated as a Transaction Record class of object-oriented technology.

23. A program storage device readable by a machine tangibly embodying at least one program of instructions executable by the machine to perform a method of automatically generating access

4 to at least one Business Application executed on a data  
6 processing system, wherein said Business Application is  
6 panel-driven and offers its services interacting with a user  
7 controlled by at least one Business Application panel and  
8 wherein said Business Application processes succeeding Business  
9 Application panels dependent on user interactions or user  
10 specified data or the contents of any kind of data base the  
11 Business Application is operating on, said method comprising:  
12 an analysis step of analyzing a description of said  
13 Business Application panels determining their input data and  
14 a generation step generating according to said analysis  
15 step at least one procedure, called Transaction Method, said  
16 Transaction Method being callable from a program and said  
17 Transaction Method being generated to autonomously executing at  
18 least a part of said Business Application without interacting  
19 with said user;  
20 wherein said generation step generates program code into  
21 said procedure, which, when executed, is providing required  
22 input data according to said analysis step to at least one  
23 sequence of succeeding Business Application panels, said  
24 sequence comprising at least one Business Application panel, and  
25 wherein said generation step generates program code into  
26 said procedure, which, when executed, is performing a required  
27 activity for launching said Business Application to autonomously  
28 process said at least one sequence of succeeding Business  
29 Application panels without interaction with said user.

1 24. The program storage device according to Claim 23 further  
2 comprising generating said description of said Business  
3 Application panels prior to said analysis step wherein said  
4 Business Application panel description being independent from  
5 the system environment in which said Business Application is  
6 implemented and wherein the method encompasses:

7 *Sub*  
8 *ai* a Business Application panel modelling step, in which at  
9 least one of said Business Application panels, processed by said  
10 Business Application as input or output panels, called Business  
11 Application messages, is modelled with respect to individual  
12 Business Application panel elements;

13 a Business Application message description generation step,  
14 in which at least one of said Business Application panels,  
15 processed by said Business Application as input or output  
16 panels, called Business Application messages, is parsed with  
17 respect to individual Business Application panel elements; and

18 in which for said modelled Business Application message a  
19 Transaction Record is generated storing said Business  
20 Application message description;

21 a User Interaction Graph generation step, in which the  
22 sequence of Business Application messages as processed by said  
23 Business Application is stored in at least one directed User  
Interaction Graph.

24  
25. The program storage device according to Claim 24 further  
comprising:

26 a Business Application message transition generation step  
27 in which a Business Application message transition action is  
28 generated to launch the Business Application to process a next  
29 Business Application panel after a current Business Application  
30 panel according to the sequence within the User Interaction  
31 Graph; and

32 in which said Business Application message transition  
33 action is stored within the generated Transaction Record during  
34 said Business Application message description generation step.

35  
36 26. The program storage device according to Claim 24 wherein  
37 said Business Application message description generation step  
38 stores descriptive information on the individual panel elements  
39 assembling said Business Application message with respect to

5 type or length or position or indications which of the panel  
6 elements represent input and/or output elements within said  
7 Transaction Record.

1 27. The program storage device according to Claim 24 wherein  
2 said Business Application panel description is generated by  
3 parsing and analyzing Business Application message  
4 implementations of the system environment said Business  
5 Application is implemented by interactions with a user of the  
6 data processing system gathering required Business Application  
7 panel description information.

1 28. The program storage device according to Claim 24 wherein  
2 said Business Application message description generation step  
3 incorporates indications on specific characteristics into the  
4 generated Transaction Record encompassing \

5 an Entry Transaction Record indication, characterizing a  
6 Business Application messages required for an initial start of a  
7 Business Application execution;

8 an External Transaction Record indication, characterizing a  
9 Business Application message being part of a second User  
10 Interaction Graph and thus describing a Business Application  
11 message sequence with a branch from a first User Interaction  
12 Graph to said second User Interaction Graph;

13 an interactive Transaction Record indication, indicating a  
14 Business Application message representing a first Business  
15 Application message of an execution unit of succeeding Business  
16 Application messages within said User Interaction Graph  
17 encompassing at least said interactive Transaction Record; and

18 a preemptive Transaction Record indication, indicating a  
19 Business Application message being part of said execution unit  
20 of succeeding Business Application messages and not being a  
21 first Business Application message in said execution unit.

19. The program storage device according to Claim 28 in which  
at least one Transaction Method is generated and provided to  
execute an execution unit of succeeding Business Application  
messages,

said Transaction Method is starting said execution of  
Business Application messages with an interactive Transaction  
Record;

said Transaction Method is proceeding said execution of  
Business Application messages with all preemptive Transaction  
Records succeeding said interactive Transaction Record within  
the User Interaction Graph;

said Transaction Method is ending said execution of  
Business Application messages with a next interactive  
Transaction Record or with a last preemptive Transaction Record,  
if no Transaction Record is succeeding said last preemptive  
Transaction Record within the User Interaction Graph.

30. The program storage device according to Claims 29 wherein  
said generated Transaction Method

encompasses as Transaction Method input parameters all  
input elements of all Business Application messages modelled by  
Transaction Records belonging to said execution unit and

encompasses as Transaction Method output parameters, all  
output elements of all Business Application messages modelled by  
Transaction Records belonging to said execution unit.

31. The program storage device according to Claim 23 extending  
the generated Transaction Method by communication relevant  
capabilities provided for

allowing the Transaction Method to be executed in a local  
data processing system and

allowing the Transaction Method to communicate with a  
remote data processing system via a computer network using  
anyone of the available communication protocols and

9 *sub* allowing the Transaction Method to control execution of  
10 said underlying Business Application on said remote data  
11 processing system.

1 32. The program storage device according to claim 23 in which  
2 the Transaction Method is generated as a method of a Transaction  
3 Object class of object-oriented technology for encapsulating and  
4 controlling said Business Application.

1 33. The program storage device according claim 23 in which said  
2 Transaction Record is generated as Transaction Record class of  
3 object-oriented technology.

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1 34. A computerized method of executing on a data processing  
2 system at least one Business Application, wherein said Business  
3 Application is panel-driven and offers its services interacting  
4 with a user controlled by at least one Business Application  
5 panel and wherein said Business Application processes succeeding  
6 Business Application panels dependent on user interactions or  
7 user specified data or the contents of any kind of data base the  
8 Business Application is operating on, said computerized method  
9 comprising:

10 a Transaction Method called from a program, said  
11 Transaction Method is autonomously executing at least a part of  
12 said Business Application without interacting with said user,  
13 wherein said Transaction Method is autonomously providing  
14 required input data to at least one sequence of succeeding  
15 Business Application panels, and

16 wherein said Transaction Method is performing the required  
17 activity for launching said Business Application to process,  
18 after a current Business Application panel, a next Business  
19 Application panel in said Business Application panel sequence  
20 without interaction with said user.

1 *July* 35. The method according Claim 34 wherein said Transaction  
2 Method includes handling Business Application messages with  
3 respect to individual Business Application panel elements based  
4 upon Transaction Records having Business Business Application  
5 message descriptions and  
6 wherein said Transaction Method launches the Business  
7 Application to process, succeeding a current Business  
8 Application panel, a next Business Application panel according  
9 to a Business Application message transition action.

1 36. The method according Claim 34 wherein said Transaction  
2 Method executes an execution unit of succeeding Business  
3 Application messages;

4 starting said execution of Business Application messages  
5 with an interactive Transaction Record indicating a Business  
6 Application message representing a first Business Application  
7 message of said execution unit of succeeding Business  
8 Application messages;

9 proceeding said execution of Business Application messages  
10 with all preemptive Transaction Records, specifying Business  
11 Application messages being part of said execution unit of  
12 succeeding Business Application messages and not being a first  
13 Business Application message in said execution unit; and

14 ending said execution of Business Application messages with  
15 a next interactive Transaction Record or with a last preemptive  
16 Transaction Record, if no Transaction Record is succeeding said  
17 last preemptive Transaction Record within said execution unit of  
18 succeeding Business Application messages.

1 37. The method according to Claim 34 wherein said Transaction  
2 Method is being executed in a local data processing system and  
3 wherein said Transaction Method communicates with a remote  
4 data processing system via a computer network and

5 *Sub* wherein said Transaction Method controls execution of said  
6 underlying Business Application on said remote data processing  
7 system.

1 38. An apparatus for executing on a data processing system at  
2 least one Business Application, wherein said Business  
3 Application is panel-driven and offers its services interacting  
4 with a user controlled by at least one Business Application  
5 panel and wherein said Business Application processes succeeding  
6 Business Application panels dependent on user interactions or  
7 user specified data or the contents of any kind of data base the  
8 Business Application is operating on, said apparatus comprising:

9 a Transaction Method means called from a program for  
10 autonomously executing at least a part of said Business  
11 Application without interacting with said user,

12 wherein said Transaction Method means includes means for  
13 autonomously providing required input data to at least one  
14 sequence of succeeding Business Application panels, and

15 wherein said Transaction Method means includes means for  
16 performing the required activity for launching said Business  
17 Application to process, after a current Business Application  
18 panel, a next Business Application panel in said Business  
19 Application panel sequence without interaction with said user.

1 39. The apparatus according Claim 38 wherein said Transaction  
2 Method means includes means for handling Business Application  
3 messages with respect to individual Business Application panel  
4 elements based upon Transaction Records having Business Business  
5 Application message descriptions, and

6 wherein said Transaction Method means launches the Business  
7 Application to process, succeeding a current Business  
8 Application panel, a next Business Application panel according  
9 to a Business Application message transition action.



40. The apparatus according Claim 38 wherein said Transaction Method means executes an execution unit of succeeding Business Application messages, said execution unit comprising:

means for starting said execution of Business Application messages with an interactive Transaction Record indicating a Business Application message representing a first Business Application message of said execution unit of succeeding Business Application messages;

means for proceeding said execution of Business Application messages with all preemptive Transaction Records, specifying Business Application messages being part of said execution unit of succeeding Business Application messages and not being a first Business Application message in said execution unit; and

means for ending said execution of Business Application messages with a next interactive Transaction Record or with a last preemptive Transaction Record, if no Transaction Record is succeeding said last preemptive Transaction Record within said execution unit of succeeding Business Application messages.

41. The apparatus according to Claim 38 wherein said Transaction Method means is being executed in a local data processing system and

wherein said Transaction Method means communicates with a remote data processing system via a computer network and

wherein said Transaction Method means controls execution of said underlying Business Application on said remote data processing system.

42. A program storage device readable by a machine tangibly embodying at least one program of instructions executable by the machine to perform method of executing on a data processing system at least one Business Application, wherein said Business Application is panel-driven and offers its services interacting with a user controlled by at least one Business Application

panel and wherein said Business Application processes succeeding

Business Application panels dependent on user interactions or user specified data or the contents of any kind of data base the Business Application is operating on, said computerized method comprising:

a Transaction Method called from a program, said Transaction Method is autonomously executing at least a part of said Business Application without interacting with said user, wherein said Transaction Method is autonomously providing required input data to at least one sequence of succeeding Business Application panels, and

wherein said Transaction Method is performing the required activity for launching said Business Application to process, after a current Business Application panel, a next Business Application panel in said Business Application panel sequence without interaction with said user.

43. The program storage device according Claim 42 wherein said Transaction Method includes handling Business Application messages with respect to individual Business Application panel elements based upon Transaction Records having Business Business Application message descriptions and

wherein said Transaction Method launches the Business Application to process, succeeding a current Business Application panel, a next Business Application panel according to a Business Application message transition action.

44. The program storage device according Claim 43 wherein said Transaction Method executes an execution unit of succeeding Business Application messages;

starting said execution of Business Application messages with an interactive Transaction Record indicating a Business Application message representing a first Business Application

message of said execution unit of succeeding Business

Application messages;

proceeding said execution of Business Application messages with all preemptive Transaction Records, specifying Business Application messages being part of said execution unit of succeeding Business Application messages and not being a first Business Application message in said execution unit; and ending said execution of Business Application messages with a next interactive Transaction Record or with a last preemptive Transaction Record, if no Transaction Record is succeeding said last preemptive Transaction Record within said execution unit of succeeding Business Application messages.

45. The program storage device according to Claim 43 wherein said Transaction Method is being executed in a local data processing system and

wherein said Transaction Method communicates with a remote data processing system via a computer network and

wherein said Transaction Method controls execution of said underlying Business Application on said remote data processing system.